Command Terms for IB Biology

Objective 1

**Define** Give the precise meaning of a word, phrase or physical quantity.

**Draw** Represent by means of pencil lines.

**Label** Add labels to a diagram.

**List** Give a sequence of names or other brief answers with no explanation.

**Measure** Find a value for a quantity.

**State** Give a specific name, value or other brief answer without explanation or calculation.

Objective 2

**Annotate** Add brief notes to a diagram or graph.

**Apply** Use an idea, equation, principle, theory or law in a new situation.

**Calculate** Find a numerical answer showing the relevant stages in the working (unless instructed not to do so).

**Describe** Give a detailed account.

**Distinguish** Give the differences between two or more different items.

**Estimate** Find an approximate value for an unknown quantity.

**Identify** Find an answer from a given number of possibilities.

**Outline** Give a brief account or summary.

Objective 3

**Analyze** Interpret data to reach conclusions.

**Comment** Give a judgment based on a given statement or result of a calculation.

**Compare** Give an account of similarities and differences between two (or more) items, referring to both (all) of them throughout.

**Construct** Represent or develop in graphical form.

**Deduce** Reach a conclusion from the information given.

**Derive** Manipulate a mathematical relationship(s) to give a new equation or relationship.

**Design** Produce a plan, simulation or model.

**Determine** Find the only possible answer.

**Discuss** Give an account including, where possible, a range of arguments for and against the relative importance of various factors, or comparisons of alternative hypotheses.

**Evaluate** Assess the implications and limitations.

**Explain** Give a detailed account of causes, reasons or mechanisms.

**Predict** Give an expected result.

**Show** Give the steps in a calculation or derivation.

**Sketch** Represent by means of a graph showing a line and labeled but unscaled axes but with important features (for example, intercept) clearly indicated.

**Solve** Obtain an answer using algebraic and/or numerical methods.

**Suggest** Propose a hypothesis or other possible answer.

**Directions:**

Using the command terms provided on the previous page answer the questions to review Living Environment. Please provide well thought out and written answers. These answers should be typed in *THIS DOCUMENT* and be ready to hand in at the end of the first week of school. You may need to use resources you have saved from previous science classes and/or resources you have available to you (hint: a library, textbook, or the *INTERWEB* might be a good start). Make sure you understand the answers you are providing. *DO NOT* copy and paste from various websites you find.

Make sure to cite all sources using the APA 6th edition in word. You will need to manage your sources under the references tab. You can then insert citations after the information is found. Highlight all objective 1 command terms in yellow. Highlight all objective 2 and 3 command terms in green.

Please complete the *self-assessment rubric* before submitting to Schoology, as this is worth half your grade. If you have any questions I can be reached at [Joshua\_Foster@eastiron.monroe.edu](mailto:Joshua_Foster@eastiron.monroe.edu).

Ecology-

1. Define food webs and food chains.
2. Describe the different trophic levels found in an ecosystem.
3. Draw and label an energy pyramid.
4. List 5 autotrophic organisms found around you house.
5. Distinguish between heterotrophic and autotrophic nutrition.
6. Explain how abiotic and biotic factors depend on each other to survive (provide specific examples).
7. Apply the concept of competition over resources to a set of organisms.
8. Discuss the water, carbon-oxygen, and nitrogen cycles.
9. Explain how diversity of populations within ecosystems relates to the stability of ecosystems.
10. Outline the effect of limiting factors on the ecosystems carrying capacity.
11. Distinguish between the following symbiotic relationships: Parasitic, Commensalism, and Mutualism.
12. Describe the effects biodiversity has on the stability of an ecosystem.
13. Describe ecological succession.

Human Impact-

1. Compare finite and renewable resources.
2. Suggest solutions to limit the human impact on our environment.
3. Discuss the following: Global Warming, Ozone Depletion, Acid Rain, Deforestation, Invasive Species, and Human Population Growth.
4. Apply the concept of loss of biodiversity to the above impacts.
5. Describe the positive and negative effects of fossil and nuclear fuels.
6. Analyze the ethics, risks, costs, and trade-offs of introducing new technologies into our ecosystem.

Human Body-

1. List the following terms in order from smallest to largest: Organ, Organelle, Cell, Organ System, Organism.
2. Sketch and label the following human body systems: Digestive, Respiratory, Male & Female Reproductive, Circulatory, Excretory, Nervous, Endocrine, and Immune.
3. Describe how three of the systems, from the above question, interact to maintain homeostasis.
4. Predict the steps your immune system would take to eliminate the influenza pathogen from your body.
5. Apply the concept of vaccinations to a disease you have never been exposed to.
6. Explain how cancer develops.
7. Compare processes that happen at the system level to the cellular level.

Cells–

1. Draw and label the plant and animal cell.
2. List the major organelles for each type of cell.
3. Describe the difference between prokaryotic and eukaryotic cells.
4. Discuss the importance of the cell membrane.
5. Apply the concept of cell receptors to diabetes.
6. Compare single cells organisms to a complex multicellular organism (i.e. human).

Biochemistry –

1. Distinguish between organic and inorganic molecules.
2. State the organic molecule that is needed to produce ATP.
3. State where all energy in an ecosystem originates from.
4. Construct a visual of the formula for photosynthesis & respiration.
5. Discuss the relationship between photosynthesis & respiration.
6. Outline the uses for ATP in the human body.
7. Describe the function of enzymes.
8. Suggest the effect pH, heat, and substrate concentration will have on the rate of a catalyzed reaction.

Genetics-

1. Suggest a reason for why some people’s skin becomes darker when exposed to sunlight.
2. Describe heredity.
3. List the levels of organization from biggest to smallest: Genome, Gene, Nucleotide, Chromosome, DNA.
4. Suggest a reason why DNA is considered a template.
5. Outline the steps of protein synthesis.
6. Discuss how a mutation can result in a disease.
7. Define phenotype & genotype.
8. Evaluate stem cell research.
9. Distinguish between genetic engineering, gene therapy, selective breeding, and cloning.
10. Explain the process of creating recombinant DNA.
11. Evaluate what genetic engineering means for our society.

Reproduction & Development-

1. Outline the steps of mitosis & meiosis.
2. Compare the processes of mitosis & meiosis.
3. Explain the development of a human beginning at sperm/egg to a full grown fetus (include the above processes in your explanation).
4. Discuss why some people look more like one of their parents.
5. Compare asexual & sexual reproduction.
6. Construct a visual representation of hormone levels during the menstrual cycle (include estrogen, progesterone, LH, and FSH).
7. Compare external and internal fertilization.
8. Discuss the use of alcohol or drugs by a pregnant woman.

Evolution-

1. Define evolution.
2. Explain how evolution occurs by means of natural selection.
3. Outline Darwin’s & Lamarck’s contribution to the theory of natural selection.
4. Describe how the fossil record supports the theory of evolution.
5. Suggest the significance of mutations and gametes in terms of evolution.
6. Discuss the variability of a species and its effect on the species longevity.
7. Explain the reason for similar behaviors being found in multiple generations of a species.
8. Describe a reason for a species to become extinct.

**Self-Assessment:**

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| --- | --- | --- | --- | --- |
|  | **Essential Biology** | | **Assessment** | |
| **Criteria** | **Complete (2)** | **Partially Complete (1)** | **Self** | **Foster** |
| **Presentation & Organization** | **NA** | Complete and neat. All command terms highlighted tables and diagrams well presented. |  |  |
| **Academic**  **Honesty** | **NA** | Sources cited using APA 5th Edition, with References section complete and correct. |  |  |
| **Objective 1**  Understanding | **All** answers for the following command terms correct:  **Define Draw Label** | Most answers for the following command terms correct:  **List Measure State** |  |  |
| **Objective 2**  Understanding | **All** answers for the following command terms correct:  **Annotate Apply Calculate Describe** | Most answers for the following command terms correct:  **Distinguish Estimate Identify Outline** |  |  |
| **Objective 3**  Understanding | **All** answers for the following command terms correct:  **Analyze Comment Compare Construct**  **Evaluate Explain Predict** | Most answers for the following command terms correct:  **Deduce Derive Design Determine Discuss**  **Show Solve Sketch Suggest** |  |  |
| **Logic, notation, mathematical working** | **NA** | Answers are presented in a logical and concise manner. SI units used most times, with correct unit symbols and definitions of terms. All mathematical work is shown. |  |  |
| **Further**  **Research** | **NA** | *Evidence* is apparent of research and reading beyond the textbook and presentations to find correct answers to challenging questions. **If any questions are unanswered, this criterion scores zero.** |  |  |
|  |  | **Total (Max 10):** |  |  |